U.S.S.N. 10,804,449

**Claim Amendments**

Please amend claims 1, 3, 5, 6, 8, 9, 11-14, 15, 16, 19-22 as follows:

Please cancel claims 2, 4, 10, 17, and 18 as follows:

Please add new claims 23-27 as follows:

1. (currently amended) A method for forming a patterned silicon-containing ~~layer~~ structure to avoid notching along sidewalls of said structure, comprising:

providing a substrate;

providing a polysilicon layer on said substrate;

providing a hard mask layer on said ~~poly~~silicon layer;

patterning and etching said hard mask layer; and

partially etching through a first thickness of said ~~poly~~silicon layer according to said hard mask layer without exposing the underlying substrate using a fluorine[[-]] ~~containing etchant gas~~ based etching chemistry; and,

then etching through a remaining thickness of said silicon layer to expose said underlying substrate according to said hard mask layer using an etchant gas devoid of fluorine.

2. cancelled

U.S.S.N. 10,804,449

3. (currently amended) The method of claim 1 wherein said step of partially etching ~~said polysilicon layer~~ comprises ~~etching said polysilicon layer according to the following process parameters:~~ a chamber pressure of from about 5 mTorr to about 80 mTorr; a source radio frequency power of from about 100 watts to about 1500 watts at a source radio frequency of 13.56 MHz; and a bias power of from about 100 watts to about 1500 watts.

4. cancelled

5. (currently amended) The method of claim 1 wherein said polysilicon layer comprises pre-doped polysilicon.

6. (currently amended) The method of claim 1 wherein said ~~poly~~silicon layer comprises amorphous silicon.

7. (original) The method of claim 1 wherein said hard mask layer is a material selected from the group consisting of silicon oxide, silicon nitride and silicon oxynitride.

8. (currently amended) The method of claim 1 wherein said fluorine[[-]] ~~containing etchant gas~~ based etching chemistry comprises a gas selected from the group consisting of a fluorocarbon gas, ~~fluoronitride~~ a fluorine and nitrogen

containing gas, and ~~fluorosulfur~~ a fluorine and sulfur containing gas.

9. (currently amended) A method for forming a ~~patterned silicon-containing layer~~ gate electrode to reduce or prevent necking at an upper portion of the gate electrode, comprising the steps of:

providing a substrate;

forming a gate oxide layer on the substrate;

providing a ~~poly~~silicon layer selected from the group consisting of polysilicon and amorphous silicon on said ~~substrate~~ gate oxide layer;

providing a hard mask layer on said ~~poly~~silicon layer;

patterning and etching said hard mask layer;

subjecting said ~~poly~~silicon layer to a ~~partial~~ first etch step using a fluorine[[-]]~~containing etchant gas~~ based etching chemistry to etch through a first thickness portion of said silicon layer without exposing the gate oxide layer, said fluorine based etching chemistry comprising a fluorine containing etchant gas selected from the group consisting of a fluorocarbon, a fluorine and nitrogen containing gas, and a fluorine and sulfur containing gas; and

When subjecting said ~~poly~~silicon layer to a ~~complete~~[[-]] a second etch step to etch through a remaining thickness portion of said silicon layer to expose said gate oxide layer using an etchant gas devoid of fluorine.

10. cancelled

11. (currently amended) The method of claim 9 wherein said etchant gas devoid of fluorine comprises chlorine, oxygen, ~~hel~~ium and bromine.

12. (currently amended) The method of claim 9 wherein said ~~poly~~silicon layer comprises pre-doped polysilicon.

13. (currently amended) The method of claim 9 wherein said ~~poly~~silicon layer comprises amorphous silicon.

14. (currently amended) The method of claim 9 wherein said ~~partial~~[[-]] first etch step comprises ~~the following process~~ parameters: a chamber pressure of from about 5 mTorr to about 80 mTorr; a source radio frequency power of from about 100 watts to about 1500 watts at a source radio frequency of 13.56 MHz; and a bias power of from about 100 watts to about 1500 watts.

U.S.S.N. 10,804,449

15. (currently amended) A method for forming a ~~patterned silicon-containing layer~~ gate electrode to reduce or prevent necking at an upper portion of the gate electrode, comprising the steps of:

providing a substrate comprising an uppermost gate oxide layer;

providing a ~~poly~~silicon layer on said substrate;

providing a hard mask layer on said ~~poly~~silicon layer;

providing a bottom anti-reflective coating layer on said hard mask layer;

providing a photoresist layer on said bottom anti-reflective coating layer;

patterning and etching said hard mask layer;

stripping said bottom anti-reflective coating layer and said photoresist layer from said hard mask layer; and

etching said ~~poly~~silicon layer according to said hard mask layer in a first etch step without exposing said gate oxide layer using a fluorine[[-]]~~containing etchant gas~~ based etching chemistry primarily consisting of a fluorine-containing etchant gas;

then etching said silicon layer in a second etch step to expose said gate oxide layer using a chlorine and bromine based etching chemistry to form a gate electrode.

16. (currently amended) The method of claim 15 wherein said fluorine-containing etchant gas comprises a gas selected from the group consisting of a fluorocarbon gas, ~~fluoronitride~~ a fluorine and nitrogen containing gas, and ~~fluorosulfur~~ a fluorine and sulfur containing gas.

17. cancelled

18. cancelled

19. (currently amended) The method of claim 15 wherein said ~~poly~~silicon layer comprises pre-doped polysilicon.

20. (currently amended) The method of claim 15 wherein said polysilicon layer comprises amorphous silicon.

21. (currently amended) The method of claim 1 wherein said polysilicon layer comprises [[a]] pre-doped polysilicon having a [[D]]dopant gradient.

22. (currently amended) The method of claim 9 wherein said polysilicon layer comprises pre-doped polysilicon having a [[D]]dopant gradient of high [[D]]dopant concentration in a top layer portion to a low [[D]]dopant concentration in a bottom layer portion of said polysilicon layer.

23. (new) The method of claim 15 wherein said silicon layer comprises pre-doped polysilicon having a dopant gradient of high dopant concentration in a top layer portion to a low dopant concentration in a bottom layer portion of said polysilicon layer.

24. (new) The method of claim 1 wherein said silicon layer comprises pre-doped polysilicon having a dopant gradient of high dopant concentration in a top layer portion to a low dopant concentration in a bottom layer portion of said polysilicon layer.

25. (new) The method of claim 1 wherein said etchant gas devoid of fluorine comprises chlorine and bromine.

26. (new) The method of claim 1 wherein said fluorine based etching chemistry consists primarily of a fluorine-containing etchant gas.

27. (new) The method of claim 9 wherein said fluorine based etching chemistry consists primarily of a fluorine-containing etchant gas.